takes place quite regularly inside the hat-shaped form, and a mechanical splitting of determinants is excluded from the outset. . . . The chemical theory is confronted here by an obstacle which it cannot encompass. , . . There is no chemical differentiation at all, no separation of organ-forming materials, no separation of differentiated tissues. Instead, a uniform material . . . produces a structure of exactly defined form without any separation of tissues, Even if we admit further accessory hypotheses for the interpretation of development—e. g., cell-division, hormones, and their differential distribution—the theory nevertheless breaks down on logical grounds. Differential distribution of division-hormones might determine that an originally simple—say, spherical—rudiment should grow unequally in different directions, and so give rise to a structure of complicated form. But here exactly the opposite occurs: an originally irregular-growing [homogeneous] material takes on a simple geometrical form. We cannot understand how this can come about by a distribution of division-hormones. . . , It is clear that no chemo-differentiation, no distribution of cell-division hormones, can bring about a combination of irregular threads into a regular form, e. g., the fusion of threads to form a contour/

The lowly mushroom thus presents us with the problem of morphogenesis in a relatively pure form, purified by the absence of all the vastly complex chemical possibilities which complicate most other instances. Says Bertalanffy : ' In these, then, we have the

formative action to some extent in " pure culture", separated from the chemical differentiation which otherwise goes hand in hand with it. But when once our attention is drawn to it, we recognize it in every developmental process, and in